

## CLAIMS

### What is claimed is:

1. A dual-screen organic electroluminescent display device, comprising:

two bottom-emission organic electroluminescent display panels, each including:

5           a transparent substrate;

an organic electroluminescent element, formed on the transparent substrate, wherein the organic electroluminescent element includes a plurality of organic electroluminescent materials, a plurality of transparent electrodes and a plurality of metallic electrodes, the transparent electrodes and the metallic electrodes being  
10           respectively formed on opposite sides of the organic electroluminescent materials;

an insulation layer, formed over the organic electroluminescent element to cover the metallic electrodes; and

an adhesive material, encapsulating two the bottom-emission organic electroluminescent display panels facing each other;

15           wherein the light emitted from the organic electroluminescent element travels through the transparent substrate, and the transparent substrate of each organic electroluminescent display panel is used as a display side.

2. The dual-screen organic electroluminescent display device of claim 1, wherein the organic electroluminescent materials can choose from the electronic hole injecting layer, the  
20           electronic hole transport layer, the emitting layer, the electron transport layer, the electron injecting layer and the charge generating layer.

3. The dual-screen organic electroluminescent display device of claim 1, wherein each transparent electrode is made of indium tin oxide (ITO), indium zinc oxide (IZO), or a thin

metal layer.

4. The dual-screen organic electroluminescent display device of claim 1, wherein the transparent substrate material is one of glass and plastics.

5       5. The dual-screen organic electroluminescent display device of claim 1, wherein the adhesive material is an UV-curing epoxy.

6. The dual-screen organic electroluminescent display device of claim 1, wherein the bottom-emission organic electroluminescent display panels are driven by two passive matrices , two active matrices or a combination mode of a passive matrix and an active matrix.

10      7. A dual-screen organic electroluminescent display device, comprising:

a top-emission organic electroluminescent element and a bottom-emission organic electroluminescent element, wherein each of the top-emission organic electroluminescent element and bottom-emission organic electroluminescent elements includes a plurality of organic electroluminescent materials, a plurality of transparent electrodes and a plurality of 15 metallic electrodes, the transparent electrodes and the metallic electrodes being respectively formed on opposite sides of the organic electroluminescent materials;

a transparent substrate, over which the bottom-emission organic electroluminescent element organic electroluminescent element is formed, the transparent electrodes being attached on the transparent substrate;

20      an insulation layer, formed over the bottom-emission organic electroluminescent element to cover the metallic electrodes, the top-emission organic electroluminescent element being located above the insulation layer, and the metallic electrodes being attached on the insulation layer;

a transparent lid, mounted on the top-emission organic electroluminescent element; and

- an adhesive material, filled between the transparent substrate and the transparent lid,  
wherein the light emitted from the bottom-emission organic electroluminescent  
element travels through the transparent substrate, and the transparent substrate and the  
transparent lid are used as two independent display screens, while the light emitted from the  
5 top-emission organic electroluminescent element travels through the transparent lid.
8. The dual-screen organic electroluminescent display device of claim 6, wherein the  
organic electroluminescent materials can choose from the electronic hole injecting layer, the  
electronic hole transport layer, the emitting layer, the electron transport layer, the electron  
injecting layer and the charge generating layer.
- 10 9. The dual-screen organic electroluminescent display device of claim 6, wherein each  
transparent electrode is made of indium tin oxide (ITO), indium zinc oxide (IZO), or a thin  
metal layer.
10. The dual-screen organic electroluminescent display device of claim 6, wherein the  
transparent substrate material is one of glass and plastics.
- 15 11. The dual-screen organic electroluminescent display device of claim 6, wherein the  
adhesive material is an UV-curing epoxy.
12. The dual-screen organic electroluminescent display device of claim 6, wherein the  
bottom-emission organic electroluminescent display panels are driven according to a  
passive matrix.
- 20 13. The dual-screen organic electroluminescent display device of claim 6, wherein the  
bottom-emission organic electroluminescent display panels are driven according to an  
active matrix.
- 25 14. The dual-screen organic electroluminescent display device of claim 6, wherein the  
top-emission organic electroluminescent display panels are driven according to a passive  
matrix.